



## The Lunar Mapping and Modeling Project

### Introduction

The Lunar Mapping and Modeling Project (LMMP) at NASA's Marshall Space Flight Center in Huntsville, Ala., has developed a suite of interactive tools that incorporate observations from past and current lunar missions, creating a comprehensive lunar research Web portal.

The online Web portal will allow anyone with access to a computer to search through and view a vast number of lunar images and other digital products. The data and tools available through the project portal will allow users to perform in-depth analyses to support mission planning and system design for lunar exploration and science missions. It will permit detailed scientific analysis and discovery and open additional educational and outreach opportunities.

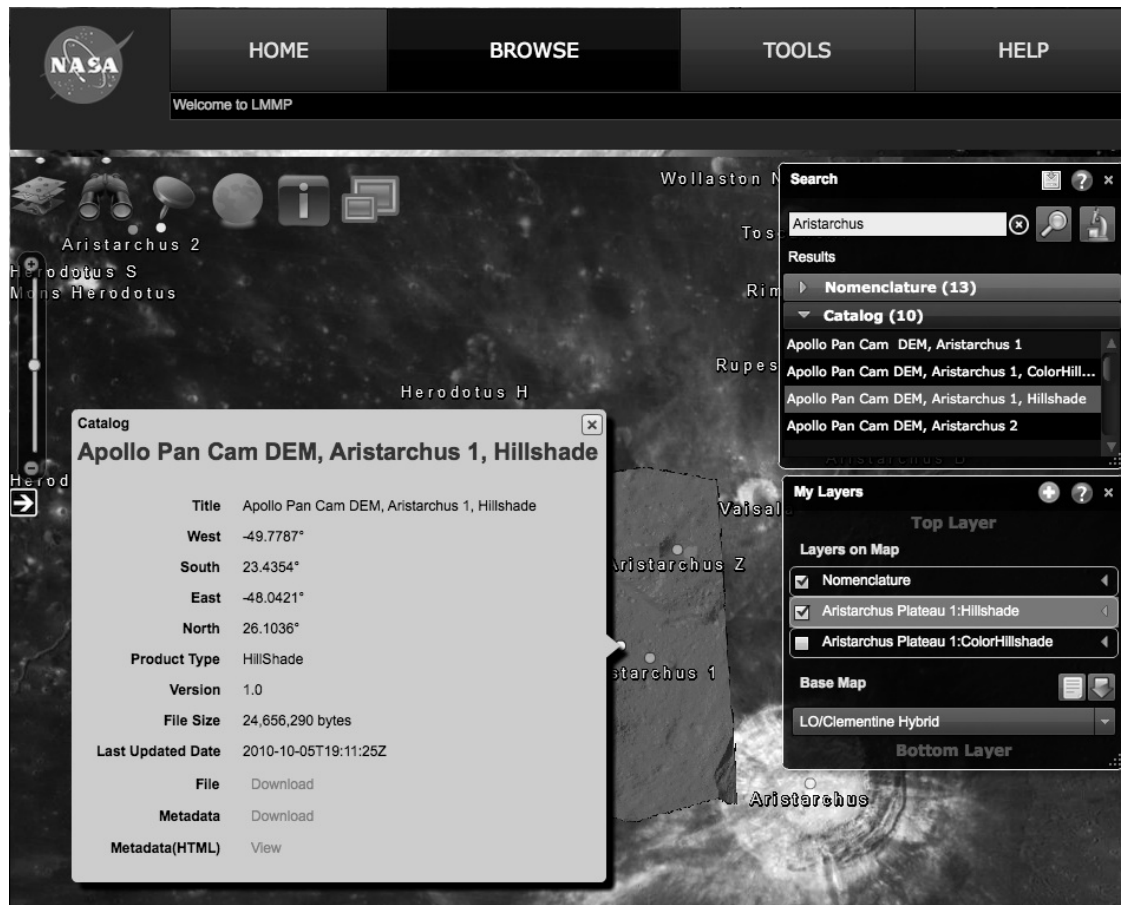
### Data Sources and Products

The Lunar Mapping and Modeling Project site incorporates data from the Lunar Reconnaissance Orbiter and other past lunar programs and missions including Apollo, Lunar Orbiter, Lunar Prospector, Clementine, Kaguya and Chandrayaan-1.

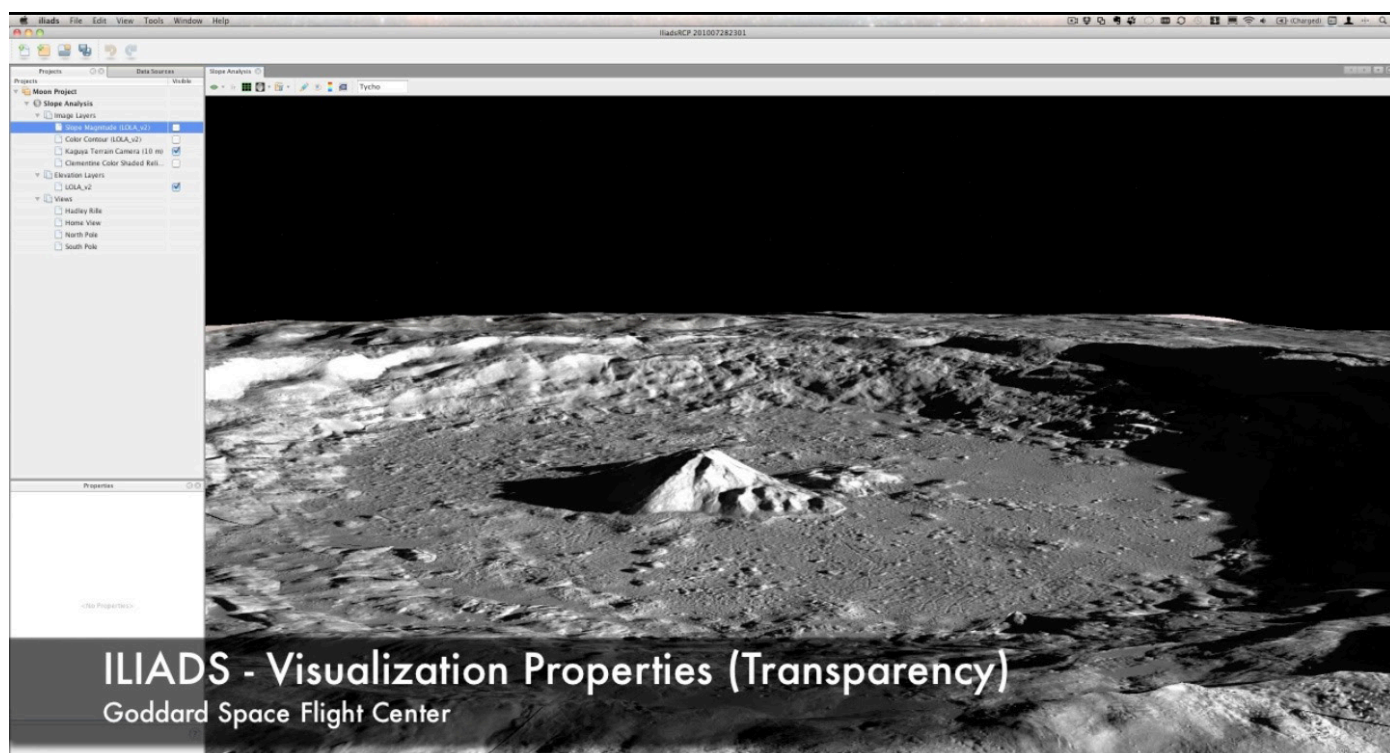
Developed data products include image mosaics, digital elevation models, local hazard assessment tools (such as maps of slope, surface roughness and crater/boulder distribution), lighting assessment tools, gravity models and resource maps such as soil maturity and hydrogen abundance.

### System and Software

Access to data products is granted through a single Web portal. The portal provides easy-to-



The screen shot of the LMMP Portal shows one of the search results for Aristarchus.



**Perspective view of Tycho crater available in ILIADS.**

use tools for browsing, data layering and feature search, including detailed information on the source of each assembled data product and links to NASA's Planetary Data System.

The portal also provides access to two additional visualization tools: Lunar Mapper, a light Web-based Geographic Information System (GIS); and the Integrated Lunar Information Architecture for Decision Support (ILIADS) tool, a downloadable desktop GIS client. Both tools offer more advanced data manipulation capabilities.

## Benefits

The information provided through LMMP can be leveraged in many ways, including planning and analysis tasks in the areas of potential landing site evaluation and selection; design and placement of landers or other stationary assets; design of rovers or other mobile assets; development of terrain-relative navigation capabilities; assessment and planning of scientific traverses; scientific analysis and discovery; and educational curriculum development.

New applications permit integrated analyses across multiple data sets (for example, examining both the lighting/thermal and surface/hazard characteristics of a given point on the moon).

The project is managed at Marshall Space Flight Center in Huntsville, Ala., and is a collaborative development effort across NASA and other organizations, including NASA's Ames Research Center at Moffet Field, Calif.; NASA's Goddard Space Flight Center in Greenbelt, Md.; NASA's Jet Propulsion Laboratory in Pasadena, Calif.; the U.S. Geological Survey in Flagstaff, Ariz.; the U.S. Army Cold Regions Research and Engineering Laboratory in Hanover, N.H.; Arizona State University in Tempe; and the University of Arizona in Tucson.

The Lunar Mapping and Modeling Project is sponsored by the Advanced Exploration Systems Program for NASA's Human Exploration and Operations Mission Directorate in Washington.

For more information about the NASA Lunar Mapping and Modeling Project, visit: <http://www.lmmp.nasa.gov>

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